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## ON THE SINO-HIMALAYAN SPECIES OF *SHORTIA*<sup>1</sup> AND *BERNEUXIA*

HUI-LIN LI

EVER since the days of Asa Gray, the genus *Shortia* has been of interest to students of phytogeography<sup>2</sup>. Up to the present, the species of this genus and its close relative *Berneuxia* are known from three isolated regions: eastern North America, Japan and Formosa, and southwestern China (Yunnan, Szechuan, and eastern Tibet). It is with the genera in the last-named region that this paper primarily deals.

Decaisne, in 1873, was the first to describe a species of this alliance from the Sino-Himalayan region, as *Berneuxia thibetica*. In 1888, Franchet transferred *Berneuxia thibetica* to *Shortia*. He apparently thought the similarities between this species and *Shortia* indicated generic identity. After a careful study of available specimens of these two genera, I conclude that Franchet's idea cannot be accepted. With the inclusion of *Berneuxia yunnanensis*, here published as new, species of this genus now number two, the older one being the original species of Decaisne. In *Shortia* there are several species, only one of which, *Shortia sinensis* Hemsley (1901), which is evidently closer to the Ameri-

<sup>1</sup> *Shortia* Torr. & Gray (1842) was actually invalidated by *Shortia* Raf. (1840), and because of this House in 1908 replaced the former by the generic name *Sherwoodia* House. However, *Shortia* Torr. & Gray has been conserved by the special committee authorized by the last International Botanical Congress to act on matters of conservation, and *Sherwoodia* House was rejected; see Kew Bull. 1940: 118. 1940.

<sup>2</sup> For an interesting summary of the early history of this genus see Jenkins, C. F., Asa Gray and his quest for *Shortia galacifolia*. *Arnoldia* 2: 13-28. pl. 4-7. 1942.

can and Japanese species known at that time than to the other Chinese species just mentioned, is found in the Sino-Himalayan region.

The several species described from Formosa are unfortunately not represented in our herbaria; thus a monographic study of the whole group cannot be undertaken. It is fortunate, however, that many of the species described in these two genera are illustrated by excellent plates.

The American *Shortia galacifolia* Torr. & Gray, the Japanese *S. uniflora* Maxim., and the Chinese *S. sinensis* Hemsley resemble each other in the dentate leaves, one-flowered peduncles, crenate corolla-lobes, and in the stamens and staminodes being arranged in two distinct whorls, the staminodes being inserted below the stamens near the base of the corolla-tube. Widely dispersed as they are, these three species are close enough in their general characters to be put into one subgroup of the genus *Shortia*. The Chinese species, *Shortia sinensis* Hemsley, has oblong-ovate leaves, which differ in shape from those of the other two species mentioned and are closer in this regard to those of the two species of *Berneuxia*, which otherwise is very different.

The several Japanese species originally described under *Schizocodon* Sieb. & Zucc., a genus which was included in *Shortia* by Otto Kuntze and most succeeding authors, may constitute another subgroup under *Shortia*. In the herbaria studied, *Shortia soldanelloides* (Sieb. & Zucc.) Mak. (*Schizocodon soldanelloides* Sieb. & Zucc.) and ***Shortia ilicifolia*** (Maxim.) comb. nov. (*Schizocodon ilicifolius* Maxim. Bull. Acad. Sci. St. Pétersb. **12**: 71. 1868, *Shortia soldanelloides*  $\beta$  *ilicifolia* Mak. Bot. Mag. Tokyo **15**: 150. 1901) are represented. They resemble the species of the group above-mentioned in the dentate leaves, crenate corolla-lobes, and distinct stamens and staminodes, but differ in having the many-flowered peduncles, the flowers spicately arranged, and the staminodes inserted only slightly below the stamens and bearing abortive anthers.

The Formosan species, *Shortia exappendiculata* Hayata, *S. subcordata* Hayata, *S. ritoensis* Hayata, and *S. transalpina* Hayata, which have also been placed in the Section *Exappendiculata* of *Shortia* as well as treated as a separate genus, *Shortiopsis*, by Hayata, are similar to the preceding group except that their

anthers are sessile, their styles undivided, and staminodes absent. These three groups are close enough in their combined vegetative and flowering characters, in my opinion, to be included in the same genus, *Shortia*.

*Berneuxia* is found only in the Sino-Himalayan region. The inflorescence is many-flowered like that of some of the species of *Shortia*, but here the flowers are more numerous and tend to be umbellately or subumbellately instead of spicately arranged. *Berneuxia* also differs from *Shortia* in that both the leaves and the corolla-lobes are entire and the stamens and staminodes are united into a ring, which is inserted near the base of the rather short corolla-tube. The corolla and stamens are not known for the new species of *Berneuxia* here described, but in other general characters this species conforms with the characters of the genus. It may be mentioned that Drude, in Engl. & Prantl, Nat. Pflanzenfam. 4(1): 83–84. 1879, and Diels, in Bot. Jahrb. 50: Suppl. 304–339. 1914, retained both *Schizocodon* and *Berneuxia* as generically distinct from *Shortia*. In my opinion, *Schizocodon* is congeneric with *Shortia*, but *Berneuxia* is sufficiently characterized to be considered as a distinct genus.

An enumeration of the species of *Shortia* and *Berneuxia* of the Sino-Himalayan region is given below. The specimens cited are deposited in the Gray Herbarium. This study was made possible through a grant from the Milton Fund of Harvard University to Dr. E. D. Merrill, of the Arnold Arboretum, to assist him in working up the extensive collections of botanical material received within the past few years from various parts of China.

*SHORTIA SINENSIS* Hemsley in Hook. Ic. Pl. 27: t. 2624. 1901. *Sherwoodia sinensis* House, Torreya 7: 233. 1907.—CHINA: Yunnan: Mengtze, southeastern mountains, A. Henry 11490 (type coll.; not seen).

This species is apparently known only from the original collection. No isotype has been located in American herbaria.

*BERNEUXIA THIBETICA* Decaisne, Bull. Soc. Bot. France 20: 159. 1873. *Shortia thibetica* Franch. Nouv. Arch. Mus. Nat. Paris II. 10: 54. t. 13 B. 1887, Pl. David. 2: 92. t. 13 B. 1888. *Shortia Davidi* Franch. op. cit. t. 13 B.—CHINA: Szechuan: without precise locality, A. Henry 7976; Pien-shen Hsien, F. T. Wang 22774, April 25, 1931, herb in thickets, alt. 2300 m., fl. white; west of Kuan Hsien, F. T. Wang 2086, May 1930, herb,

on grassy slopes, alt. above 3500 m., fl. white; O-pien Hsien, *T. T. Yü* 648, May 5, 1932, herb, in woods, leaves bright green above, white beneath, fl. white. Sikang: near Tachienlu, *A. E. Pratt* 749, at 9000–13500 feet. Yunnan: mountains above Tseku and Tseh-chung, Mekong-Salwin watershed, *J. F. Rock* 8795, May 19, 1923, on boulders; Mekong-Salwin Divide, Bila, *T. T. Yü* 19031, June 13, 1938, a perennial herb, 2–4 ins., upon precipitous rocks, alt. 3700 m., fl. white, common; Salwin-Kiukiang Divide, Swagchiang, *T. T. Yü* 22968, Nov. 5, 1938, herb, rare, in bamboo thickets, alt. 2800 m., fruit grayish brown; northwestern Likiang, Lutien, *R. C. Ching* 20544, May 29, 1939, plant 6 in. high, in mixed forests, fl. white; northwestern Likiang, Tse-ku on the Yangtze bank, *R. C. Ching* 20589, June 1, 1939, plant 6 in. high, in mixed forests, fl. white. Also known from eastern Tibet (*Decaisne* l. c.), and western Szechuan (*Hand.-Maz. Symb. Sin.* 7: 801. 1936).

**BERNEUXIA yunnanensis** sp. nov. Herba perennis subcaulis ubique glabra, caudice incrassato; foliis coriaceis glabris ovatis longe petiolatis, absque petiolo ad 3.2 cm. longis, 1.7 cm. latis, apice late obtusis, basi cuneatis, margine integris revolutis, supra virescentibus, subtus pallidioribus, nervis lateralibus utrinsecus 4, venis tertiariis supra leviter impressis subtus subconspicuis; petiolis alatis, ad 3 cm. longis; inflorescentiis gracilibus longe pedunculatis, ad 18 cm. longis, circiter 10–15-floris, floribus spicatis, superioribus subumbellatis, pedicellis hirtellis, 0.6–1.2 cm. longis, basi bracteatis, bracteis oblongis acuminatis circiter 5 mm. longis persistentibus, bracteolis 1 vel 2 medium pedicelli versus, lanceolatis acuminatis circiter 4 mm. longis, persistentibus; calyce 5-partito, lobis fere liberis ovatis, 4–5 mm. longis, 2.5 mm. latis, rigidis scariosis longitudinaliter striatis persistentibus; corolla staminibusque non visis; ovario triloculari multiovulato, stylo persistente 1 mm. longo, stigmatibus distincte 3-lobato.—  
CHINA: Yunnan: Salwin-Kiukiang Divide, Natahtzu, *T. T. Yü* 20803 (TYPE), Oct. 20, 1938, a casual, perennial herb, alt. 3600 m., under trees or upon shaded rocks, fruit purplish red, calyx persistent.

This species is a close relative of *Berneuxia thibetica* Dec., differing in the smaller leaves with shorter petioles and relatively broader blades. These are always ovate, with a more or less broadly obtuse apex, while in *B. thibetica* the leaves are usually oblong-obovate, and with an obtuse to acute or acuminate apex. The inflorescence of the new species is more or less spicate, with the uppermost flowers somewhat umbellately arranged; in *B. thibetica* the flowers are definitely umbellate. Moreover, in the latter species the peduncle equals or only slightly exceeds the

length of the leaves, while in the new species it is about three times as long as the leaves.

All the specimens on the two available sheets of the type collection are rather mature, approaching fruiting condition and without corollas and stamens. In the field note, it is mentioned that the collection included a flowering specimen (*T. T. Yü* 19384), but no flowers are present in our material. As the characters on the material at hand are sufficient to indicate that a new species is represented, and since there is little prospect of receiving any further shipments of specimens from China in the near future, it appears desirable to name and describe the plant without further delay.

ARNOLD ARBORETUM,

HARVARD UNIVERSITY.

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## TARAXACUM IN ARCTIC CANADA (EAST OF 100° W.)

GUSTAF HAGLUND

(Introduction by ARTHEME DUTILLY, O. M. I.)

In the course of my first seven successive botanizing trips to the Canadian Arctic, I collected a number of specimens of *TARAXACUM*. In 1938 I was accompanied by Rev. Maximilian Duman, O.S.B., who also collected a few in the same region.

A synopsis of the localities, dates of collections, and collection numbers, follows:

- 1—Arctic Alaska
- 2—Arctic Bay, Baffin Isl., N. W. T., Lat. 73° 5' N., Long. 83° 40' W., Silurian-Lower Palaeozoic, 12-9-36.
- 3—Baker Lake, N. W. T., Lat. 64° 30' N., Long. 97° ?' W., Archaean, 11-8-36, 2-9-37, 31-7-38.
- 4—Bernard Harbor, Lat. 68° 46' N., Long. 114° 50' W., 20-8-34.
- 5—Cape Barrow, Arctic Sea, Alaska.
- 6—Cape Dorset, Baffin Island, N. W. T., Lat. 64° N., Long. 76° W., Archaean and (?) precambrian granite, gneiss, 25-8-36.
- 7—Chesterfield Inlet, Hudson Bay, N. W. T., Lat. 63° 20' N., Long. 90° 42' W., Archaean, 31-7-36, 21-8-37, 16-8-28.
- 8—Churchill, Man., Hudson Bay, N. W. T., Lat. 58° 46' N., Long. 94° 10' W., Lower Palaeozoic, 23-7-36, 8-8-38.

- 9—Fort Smith, Mackenzie River, N. W. T., Lat. 60° ?' N., Long. 111° 55' W., Alluvial, 26-6-40.
- 10—Great Whale River, Ungava, Quebec, Lat. 55° 26' N., Long. 78° 46' W., Archaean, granite, 14-9-39.
- 11—Ivuvivik, Ungava, Quebec, Lat. 62° 25' N., Long. 78° 5' W., Precambrian, granite, and gneiss, 23-7-38, 23-8-39.
- 12—King William Island, N. W. T.
- 13—Lake Harbour, Baffin Island, N. W. T., Lat. 62° 50' N., Long. 69° 55' W., Precambrian granite and gneiss, 27-8-36, 28-8-41.
- 14—Letty Harbour, Arctic Sea, N. W. T., Lat. 70° ?' N., Long. 124° ?' W., Pleistocene and ?, 19-7-40.
- 15—Port Burwell (Labrador), N. W. T., Lat. 60° 25' N., Long. 64° 52' W., Precambrian, volcanics and intrusives, 1-9-41.
- 16—Repulse Bay, North Hudson Bay, N. W. T., Lat. 66° 33' N., Long. 86° 40' W., Archaean, 10-9-37, 20-8-38, 11-9-38.
- 17—Signuia (Cape Haven), Baffin Island, N. W. T.
- 18—Sugluk Bay, Ungava, Quebec, Lat. 62° 15' N., Long. 75° 28' W., Archaean, 13-9-38.
- 19—Wakeham Bay, Ungava, Quebec, Lat. 61° 36' N., Long. 72° ?' W., Precambrian, granite and gneiss, 19-8-39.
- 20—Wolstenholme, Ungava, Quebec, Lat. 62° 25' N., Long. 77° 14' W., Precambrian, volcanics and intrusives, 24-8-36.

This list includes data for specimens by other collectors cited by Haglund.

Most of the localities just listed are shown on the map of the Northwest Territories published by the Canadian Department of the Interior (scale 60 miles to 1 inch), Ottawa, 1929.

At the suggestion of Prof. Eric Hultén of the Universitet, Lund, Sweden, on his visit to Washington a few years ago, the collections were sent to Dr. Gustaf Haglund, Lund, Sweden, who has prepared the following treatment.

#### KEY

- A. Outer phyllaries corniculate-appendaged beneath the apex.
- B. Outer phyllaries broad, short to more or less broad-ovate. Appendages small. Flowers white or yellow. Achenes black to greenish black.
  - c. Flowers white. Achenes black. . . . . 1. *T. hyparcticum* Dahlst.
  - c. Flowers yellow. Achenes greenish black.
    - d. Leaves entire to sparingly lobed. . . . . 2. *T. phymatocarpum* J. Vahl.
    - d. Leaves densely lobed. Lobes deltoid, more or less dentate. . . . . 3. *T. alaskanum* Rydb.
- B. Outer phyllaries mostly narrower and longer, more or less ovate-lanceolate to lanceolate, rarely with short, mostly with long to very long appendages beneath the apex. Flowers yellow. Achenes sordid or greenish straw-colored to more or less reddish to reddish brown.
  - c. Achenes sordid to greenish straw-colored.
    - d. Lobes of the leaves more or less long, more or less narrow. Petioles usually bright violet-red. . . . . 4. *T. lacerum* Greene.

- d. Lobes of the leaves broader, deltoid. Petioles pale. . . . .5. *T. hyperboreum* Dahlst.
- e. Achenes more or less red to reddish brown (umbrabrown). . . . .
- d. Achenes more or less red with a narrow, cylindrical beak. . . . .6. *T. Malteanum* Dahlst.
- d. Achenes reddish brown to umbra-brown with a more or less short, conical beak. . . . .
- e. Terminal lobes of the leaves mostly more or less short (triangular). . . . .
- f. Leaves long, narrow, lobes short, triangular, more or less remote with sharp points. . . . .7. *T. pseudonorvegicum* Dahlst.
- f. Leaves shorter, lobes broader, deltoid, more or less approximate, less acute. . . . .8. *T. russeolum* Dahlst.
- e. Terminal lobes of the leaves mostly very long and narrow. . . . .9. *T. umbrinum* Dahlst.
- A. Outer phyllaries lacking appendages. . . . .
- B. Achenes straw-yellow with a conic-cylindrical beak about 1 mm. long. . . . .10. *T. lapponicum* Kihlm.
- B. Achenes light brown with a hardly conspicuous or a very short, conical beak. . . . .11. *T. dentifolium* G. Hagl.

1. *TARAXACUM HYPARCTICUM* Dahlst. Arkiv. f. Bot. 4<sup>s</sup>: 17. 1905.—“*T. phymatocarpum* Handel-Mazzetti” Mon. Gat. Tarax. 58. 1907, pro parte.—BAFFIN ISLAND: *Dutilly* 1385. Arctic Bay.

2. *T. PHYMATOCARPUM* J. Vahl in Hornem. Icones Fl. Dan. 12<sup>39</sup>: 6. t. 2298. 1840; H. Dahlstedt Arkiv f. Bot. 4<sup>s</sup>: 22. 1905; Handel-Mazzetti Mon. Gat. Tarax. 58. 1907, pro parte.—NORTHWEST TERRITORY: *Dutilly* 393, Letty Harbour.

3. *T. ALASKANUM* Rydb. Bull. Torr. Bot. Club. 28: 512. 1901. *T. pumilum* Dahlst. Arkiv. f. Bot. 4<sup>s</sup>: 27. 1905.—ARCTIC ALASKA and eastern ARCTIC AMERICA.

4. *T. LACERUM* Greene, Pittonia 4: 230. 1901. *T. groenlandicum* Dahlst. Arkiv. f. Bot. 5<sup>o</sup>: 23. 1906. QUEBEC: *Dutilly* 4062. Ungava, Wakeham Bay.—MANITOBA: J. M. Macoun 79286, Hudson Bay, Churchill; *Duman* 1149, 1534, 1938, Churchill; *Dutilly* 143, Churchill.—NORTHWEST TERRITORIES: *Dutilly* 6601 i, Chesterfield Inlet; *Dutilly* 152, Fort Smith.

5. *T. HYPERBOREUM* Dahlst. in Ostenfeld, Vid. Selsk. Skr. Math. Nat. 8: 26. 1909.—KING WILLIAM LAND: *Frits Johansen* 98714, Bernard Harbour.

6. *T. Malteanum* Dahlst. n. sp. *Folia* sat obscure viridia ± linearia-linearilanceolata, lobis brevibus ± deltoideis-triangularibus basi sat latis acutis apice brevi haud raro paullum recurvato dorso integro vel in foliis interioribus parce denticulato, lobo terminali triangulari-hastato-sagittato brevi vel in foliis interioribus paullum elongato acuto lobulis basalibus brevibus acutis, petiolis et nervis medianis pallidis. *Scapi* folia superantes ± colorati glabri vel apice ipso leviter araneosi. *Involucrum* mediocre ± atro-viride basi ovata. *Squamae* exteriores ± ovato-

lanceolatae sub apice breviter cornutae-corniculatae laxe adpressae vix marginatae, interiores sub apice  $\pm$  cornutae. *Calathium* 25–35 mm. diametro. *Ligulae* obscure luteae, marginales extus stria fusco-violacea ornatae. *Antherae* polline carentes. *Stylus* et *stigmata* atro-viridia. *Achenium*  $\pm$  rubiginosum, 4 mm. longum c. 1 mm. latum apice breviter spinulosum ceterum  $\pm$  tuberculatum in pyramiden 1–1.2 mm. longam fere cylindricam sat abrupte abiens. *Rostrum* 10 mm. longum. *Pappus* albus 6–8 mm. longus.—Northern Quebec, North-West Territories and Baffin Island. QUEBEC: *Dutilly* 899, Wolstenholme; *Dutilly* 1938, 6057, 6058, Wakeham Bay; *Dutilly* 6100b, 6101a, Ivuyivik. NORTH-WEST TERRITORIES: *Dutilly* 6800, Repulse Bay; *J. R. Cox*. *J. J. O'Neill* 98712, South Coast of Coronation Gulf, Cape Barrow. BAFFIN ISLAND: *M. O. Malte* 120293, Lake Harbour. (TYPE in State Museum of Natural History, Stockholm).

The species simulates in habit certain modifications of *T. pseudonorvegicum* Dahlst., but is clearly distinct by its dark-green leaves having triangular to deltoid, short lobes, broad at the base, with slightly downward-turned points and usually short terminal lobe. The achenes are rust-red to rust-brown with a cylindrical, comparatively long and narrow beak recalling those of the group *Erythrosperma* Dahlst. The specimen from Point Barrow belongs to an entire-leaved modification, in what concerns the phyllaries and the achenes completely agreeing with those from Lake Harbour.

7. *T. pseudonorvegicum* Dahlst. n. sp. *Folia* gramineo-viridia elongata anguste linearia-lineari-lanceolata sat distantia, lobis brevibus triangularibus basi latis integris apicibus patentibus acutis-longioribus dorso parce dentato apicibus magis protractis  $\pm$  retroversis acutis, lobo terminali angusto  $\pm$  elongato lobulis basalibus perbrevibus  $\pm$  patentibus acutis, petiolis et nervis medianis  $\pm$  pallidis. *Involucrum* parvum-mediocre  $\pm$  atro-viride et  $\pm$  pruinatum basi ovata. *Squamae* exteriores  $\pm$  late ovato-lanceolatae-ovales breviter acuminatae sub apice cornubus brevibus-mediocribus praeditae  $\pm$  adpressae et conspicue albido-marginatae, interiores lineari-lanceolatae sub apice breviter cornutae-corniculatae. *Calathium* parvum 30–35 mm. diametro. *Ligulae* amoene luteae angustae  $\pm$  canaliculatae, marginales extus stria angusta vel fere evanescenti cano-violacea notatae. *Antherae* polline carentes. *Stylus* et *stigmata* obscure fusco-virescentia, sicca  $\pm$  atra. *Achenium* fulvo-brunneum 4 mm. longum c. 1.2 mm. latum apice  $\pm$  longe et late spinulosum ceterum  $\pm$  tuberculatum vel basi laeve in pyramiden vix 1 mm. longam vel breviorum conico-cylindricam abrupte abiens.

*Rostrum* 7–8 mm. longum. *Pappus* albus 5–7 mm. longus.—BAFFIN ISLAND and North-West Territories. BAFFIN ISLAND: *D. White* et *Ch. Schuchert* 110, Signuaia, near Cape Haven; *J. Dervey Soper* 121112, Cape Dorset; *N. Polunin* 2190, Cape Dorset. NORTH-WEST TERRITORIES: *M. O. Malte* 120448, Chesterfield Inlet, Hudson Bay, (TYPE in the State Museum of Natural History, Stockholm); *Dutilly* 4454, 6623, 6715, Chesterfield Inlet; *Dutilly* 6298h, Baker Lake.

The species is apparently related to *T. umbrinum* Dahlst., but is well distinguished from that species by its shorter, more patent lobes of the leaves, longer and stronger developed appendages of the phyllaries, as it seems smaller heads and larger yellowish-brown achenes which have longer spines at the top and which abruptly pass into the beak and have a longer stipe of pappus. The lobes of the leaves often gives it a similarity with *T. norvegicum* Dahlst., from which it, however, clearly differs in shorter lobes of the leaves, broader at the base, pale petioles and median nerves, smaller heads, more narrow ligulae and achenes that are more pale-coloured and have a longer stipe of pappus.

8. *T. russeolum* Dahlst. n. sp. *Folia* laete viridia anguste lanceolata-oblongo-lanceolata paucilobata, lobis brevibus triangularibus-deltoidibus basis  $\pm$  latis apicibus brevibus patentibus vel saepe paullum recurvatis acutis, lobo terminali sat elongato triangulari-ovato-hastato marginibus convexis integris breviter acuto, interiora magis integra crebre lobulato-dentata apice integra breviter acuta, petiolis pallidis vel basi leviter coloratis et nervis medianis pallidis vel vulgo leviter coloratis. *Scapi* folia aequantes vel  $\pm$  superantes  $\pm$  colorati sub involucrio  $\pm$  araneosi. *Involucrum* sat obscure olivaceo-viride basi  $\pm$  ovata. *Squamae* exteriores  $\pm$  ovatae-ovato-lanceolatae laxae adpressae-leviter patentibus supra saepe  $\pm$  violascentes acuminatae ecorniculatae vel singulae-interdum fere omnes  $\pm$  corniculatae-cornutae, interiores sub apice breviter corniculatae vel callosae. *Calathium* 30–35 mm. latum. *Ligulae* luteae, marginales extus stria rubro-purpurea notatae. *Antherae* polline carentes. *Stylus* et *stigmata* sat fusco-virescentia, sicca sat obscura. *Achenium* laete rubiginosum apice breviter spinulosum ceterum  $\pm$  tuberculatum c. 4 mm. longum 1 mm. latum vel paullo latius apice in pyramidem 0.8 mm. longam late conicam sensim abiens. *Rostrum* c. 8 mm. longum. *Pappus* albus c. 7 mm. longus.—BAFFIN ISLAND: *M. O. Malte* 119207, Lake Harbour (TYPE in State Museum of Natural History, Stockholm; *Dutilly* 1040a (*T. russeolum* ?), Lake Harbour.

Distinguished from other here described types of the group

*Ceratophora* Dahlst. by the following characteristics. The leaves are broader, especially towards the apex. They have fewer, short and broad lobes with short somewhat downward turned sharp points. The petioles as well as the median nerves are often slightly colored. The phyllaries are more light-colored with more or less broad, acuminate outer phyllaries which have or have not more or less strongly developed appendages below the apex. The appendages of the inner phyllaries are very short. The achenes are more or less rust-red with very short and broad, conical beaks. The outer phyllaries are subject to a considerable variation concerning appendages. In some specimens these are completely lacking or can just be traced on the outer phyllaries while in others they are lacking on part of the phyllaries but more or less well developed on others. In several specimens they are found in some heads but are lacking in others. The inner phyllaries always possess appendages, even if they sometimes are very small.

9. *T. umbrinum* Dahlst. n. sp. *Folia* gramineo-viridia linearia-lineari-lanceolata parce lobata, lobis brevibus-brevissimis triangularibus basi latius parce denticulatis apicibus patentibus vel longioribus recurvis acutis, lobo terminali  $\pm$  elongate triangulari obtuso-acutiusculo, petiolis angustis et nervis medianis pallidis. *Scapi* plures folia  $\pm$  superantes vel aequantes  $\pm$  colorati  $\pm$  glabri. *Involucrum* mediocre latum crassiusculum  $\pm$  atro-viride basi ovato-truncata. *Squamae* exteriores latiusculae ovatae-ovato-lanceolatae subadpressae parum vel vix marginatae plurimae sub apice breviter acuminato corniculis obtusis plerumque sat parvis praeditae, interiores corniculatae vel callosae. *Calathium* c. 40 (-45) mm. diametro. *Ligulae* subobscure luteae, marginales extus stria rubro-violacea ornatae. *Antherae* polline carentes. *Stylus* et *stigmata* fusco-virescentia, sicca sat obscura. *Achenium* umbrinum apice breviter spinulosum ceterum  $\pm$  tuberculatum vel laeve angustum c. 3.5 mm. longum 0.75 mm. latum in pyramidem vix 1 mm. longam conico-cylindricam sensim abiens. *Rostrum* 6-7 mm. longum. *Pappus* albus 6-7 mm. longus. Northern Labrador, Northern Quebec and Baffin Island.

LABRADOR: *M. O. Malte* (TYPE in State Museum of Natural History, Stockholm), Hudson Strait, Port Burwell; *Dutilly* 1657b, Hudson Strait, Port Burwell.

QUEBEC: *Dutilly* 6984 f, h, j, k, Sugluk West; *M. Duman* 2494, Sugluk West; *Dutilly* 810a, 900 (T. cfr. *umbrinum*), Wolstenholme; *Dutilly* 6100a, 6101b, Ivuyivik. BAFFIN ISLAND: *Dutilly* 1355, Arctic Bay.

This species with its weakly developed appendages on the phyllaries belongs to the less differentiated types in the group *Ceratophora* Dahlst. The appendages that usually are considerable are best developed on the outer phyllaries. Often, especially on the inner phyllaries, they are only indicated by a small swelling under their points. In its pure white, silky pappus-bristles it completely agrees with other species of the group. The achenes are characteristic, have umbra-brown colour with weakly developed spines at the apex but are otherwise tuberculate to more or less glabrous and are gradually merging into the hardly one mm. long beaks. The stipe of pappus is unusually short. This species comes closest to *T. norvegicum* Dahlst. of the European species.

10. *T. LAPPONICUM* Kihlm. Meddel. Soc. Faun. Fl. Fenn. **11**: 108. 1884. *T. croceum* Dahlst. in Anderss. and Hesselman Bih. K. Svenska Vet.-Akad. Handl. **26**, Avd. 3. 1900; Handel-Mazzetti Mon. Gat. Tarax. 73. 1907, pro parte.—LABRADOR: *Dutilly* 1657a, Port Burwell. QUEBEC: *Dutilly* 6047m, Wakeham Bay; A. P. Low 63228, Great Whale River.

11. *T. dentifolium* G. Hagl. n. sp. *Planta* parva-mediocris sat robusta. *Folia* lobis lateralibus deltoideis approximatis brevibus latis retroversis dorso saepius  $\pm$  dentato. *Achenium* c. 4 mm. longum laete brunneum superne squamulosum-spinulosum ceterum pro maxima parte laeve sat sine pyramide vel pyramide brevissima late conica. Ceterum *T. lapponico* Kihlm. simile.—QUEBEC: *Dutilly* 6074f, h, Wakeham Bay; *Duman* 2652, (TYPE in Herbarium Catholic University of America, Washington, D. C.), Wakeham Bay.

This species is closely related to *T. lapponicum* Kihlm. but differs by its light brown achenes rather lacking beaks or with very short, broad conical ones. The lobes of the leaves are approximate, broad and short with downwards turned, acute points. They are often more or less dentate in their upper margins.

Contribution from the UNIVERSITY OF LUND and the ARCTIC  
INSTITUTE OF THE CATHOLIC UNIVERSITY OF AMERICA.

THE GENUS *ASTER* IN NOVA SCOTIA

L. H. SHINNERS

THIS is a synopsis of the species of *Aster* known to occur in Nova Scotia, based chiefly on a study of collections in the Herbarium of Nova Scotia Agricultural College, the Herbarium of the University of Wisconsin, and the Gray Herbarium. Notes on distribution and habitat have been obtained from information given on specimen labels, supplemented by published records, and by field notes supplied by Mr. A. E. Roland, of Nova Scotia Agricultural College, Truro. No effort has been made to give full discussions of minor forms and hybrids, and of nomenclature, or to account for all published reports of species which are not included in the present list. Press of other work and of other circumstances have made it necessary to complete this study more hurriedly and less thoroughly than was desired, but it is hoped that it will prove helpful to those studying the flora of eastern Canada.

For much invaluable assistance and for many courtesies, I am indebted to Mr. Roland, and to Mr. C. A. Weatherby, of the Gray Herbarium. Grateful acknowledgment is made to the curators of the herbaria listed above for the use of collections in their charge.

In the following key and descriptions, the height of the involucre is given as measured from the base to the tips of the inner phyllaries; in *A. Rolandii*, *A. foliaceus*, and *A. puniceus*, the outer phyllaries may be longer.

KEY TO NOVA SCOTIA SPECIES OF *ASTER*

1. Middle and lower stem-leaves petioled, the blades abruptly narrowed or truncate or cordate at base
2. Outermost phyllaries (involucral bracts) 1.0–2.5 mm. wide, less than  $2\frac{1}{2}$  times as long as wide.....1. *A. macrophyllus*
2. Outermost phyllaries 0.2–0.8 mm. wide, more than  $2\frac{1}{2}$  times as long as wide
3. Phyllaries glabrous on the back
4. Involucres 5.2–8.2 mm. high; disks 4.5–7.5 mm. across; inflorescence corymbose-paniculate, the peduncles or ultimate branches very uneven in size.....3. *A. ciliolatus*
4. Involucres 3.6–5.2 mm. high; disks 3–5 mm. across; inflorescence racemose-paniculate, the peduncles equal or grading uniformly in size.....4. *A. cordifolius*
3. Phyllaries pubescent on the back.....5. *A. undulatus*

1. Middle and lower stem-leaves sessile, or tapering gradually to slender petiole-like bases
5. Middle phyllaries with midveins expanded upward into prominent colored (usually green) tips
6. Phyllaries glabrous on the back
  7. Involucres 3.3–6.0 mm. high; outer phyllaries 0.3–3.3 mm. long, not more than  $\frac{2}{3}$  as long as the inner
    8. Rays 3.5–6.0 mm. long; leafy bracts of the peduncles and ultimate branches of the inflorescence oblong-lanceolate or narrowly oblong, acute or obtuse
    9. Leaves pubescent on the midvein beneath, at least toward the base. . . . . 6. *A. lateriflorus*
  9. Leaves glabrous beneath
    10. Involucres 4.8–6.0 mm. high; stems glabrous or more commonly pubescent; plants of Cape Breton Island. . . . . 7. *A. tenuipes*
    10. Involucres 3.3–5.0 mm. high; stems glabrous; plants of southwestern Nova Scotia. . . . . 8. *A. Tradescanti*
  8. Rays 5.5–10 mm. long; leafy bracts of the peduncles and ultimate branches of the inflorescence linear-lanceolate, acuminate. . . . . 9. *A. paniculatus*
7. Involucres 5–12 mm. high; outer phyllaries 3–12 mm. or more long, more than  $\frac{2}{3}$  as long as the inner
11. Stems glabrous or pubescent above in lines
  12. Internodes just below the inflorescence 4–16 mm. long; plants 8–50 cm. tall; involucres 5–8 mm. high. . . . . 10. *A. Rolandii*
  12. Internodes just below the inflorescence 16–45 mm. long; plants 30–110 cm. tall; involucres 6–9 mm. high. . . . . 11. *A. foliaceus*
  11. Stems hispid-pubescent over the surface. . . . . 12. *A. puniceus*
6. Phyllaries glandular or pubescent or both on the back
  13. Involucres less than 6 mm. high. . . . . 5. *A. undulatus*
  13. Involucres more than 6 mm. high. . . . . 13. *A. novae-angliae*
5. Middle phyllaries without colored tips, or with colored tips not formed by the expansion of the midveins
14. Involucres more than 6 mm. high
  15. Outer phyllaries 1.0–2.5 mm. wide. . . . . 2. *A. radula*
  15. Outer phyllaries 0.2–0.8 mm. wide
    16. Largest stem-leaves 3–12 mm. wide; plants with 41–75 or more leaves below the inflorescence. . . . . 14. *A. nemoralis*
    16. Largest stem-leaves 9–50 mm. wide; plants with 10–40 leaves below the inflorescence
      17. Largest stem-leaves 9–24 mm. wide; plants with 25–40 leaves below the inflorescence. . . . .  $\times$  *A. Blakei*
      17. Largest stem-leaves 20–50 mm. wide; plants with 10–20 leaves below the inflorescence. . . . . 15. *A. acuminatus*
14. Involucres less than 6 mm. high. . . . . 16. *A. umbellatus*

## I. MACROPHYLLUS SERIES

Involucres large (6.5–12 mm. high); phyllaries broad, obtuse or acute, with colored tips not formed by the expansion of midveins.

1. *A. MACROPHYLLUS* L. (Including var. *velutinus* Burgess.)  
Woods and thickets, less commonly in open ground; frequent,

chiefly in the central and western parts of the province, from Pictou Co. to Yarmouth Co.

2. *A. RADULA* Ait. (Including var. *strictus* (Pursh) Gray, at least as to plants of Nova Scotia.) Bogs, wet meadows, and damp thickets; common throughout the province.

## II. CORDIFOLIUS SERIES

Involucres small or middle-sized (3.6–8.2 mm. high); phyllaries narrow, acute, with colored tips formed by the expansion of the midveins. Middle and lower stem-leaves petioled, the blades truncate or cordate at base.

3. *A. CILIOLATUS* Lindl. ex Hook., Fl. Bor.-Am. 2: 9, 1834. *A. Lindleyanus* T. & G., Fl. N. A. 2: 122, 1841. *A. Lindleyanus* var. *ciliolatus* A. Gray, Syn. Fl. N. A. 1: 182, 1884.

Known from a single collection, the specimen not yet in flower but unmistakably this species: border of old hillside woods, Mt. Uniacke, Hants Co., *Fernald, Bartram & Long*, July 26, 1921 (in Gray Herbarium).

4. *A. CORDIFOLIUS* L. Thickets, roadsides, and open ground; common in the central and northern parts of the province, from Annapolis Co. to Cape Breton Island.

5. *A. UNDULATUS* L. Dry open woods and thickets; southern Lunenburg Co., and (according to Weatherby, 1942) at Greenfield in adjacent Queens Co.

## III. LATERIFLORUS SERIES

Involucres small (3.3–6.0 mm. high); phyllaries narrow, obtuse or acute, with colored tips formed by the expansion of the midveins. Leaves sessile, linear-lanceolate to elliptic. Peduncles and branches bearing numerous leafy bracts of more or less uniform size.

6. *A. LATERIFLORUS* (L.) Britton. Dry open woods, thickets, fields, pastures, and roadsides; very common throughout the province.

7. *A. tenuipes* (Wieg.), stat. nov. *A. lateriflorus* var. *tenuipes* Wiegand, RHODORA 30: 174, 1928.

Swamps and damp woods, Cape Breton Island.

With more diffuse inflorescence and fewer longer-peduncled heads than *A. lateriflorus*, and without the pubescent midveins of the leaves of that species, which it otherwise resembles in having the stem usually pubescent and the disk corollas deeply lobed. In general appearance much like *A. Tradescanti*. It seems desirable to indicate its peculiarities by according it recognition as a separate species, rather than retaining it as a variety under *A. lateriflorus*, where it is not at home.

8. *A. TRADESCANTI* L.; Fernald, *RHODORA* **35**: 312–314, 1935. *A. saxatilis* (Fernald) Blanchard; Wiegand, *RHODORA* **35**: 34, 1933.

Damp shores in the southern part of the province, in Digby, Yarmouth, and Queens Counties.

#### IV. PANICULATUS SERIES

Involucres rather small (4.0–5.5 mm. high); phyllaries narrow, acute, with green tips formed by the expansion of the midveins. Leaves sessile, narrowly lanceolate. Peduncles and branches bearing few scattered leafy bracts of uneven size.

9. *A. PANICULATUS* Lam., *Encyc.* **1**: 306, 1783; *sensu* Wiegand, *RHODORA* **35**: 28–29, 1933. Not *A. paniculatus* Mill., *Gard. Dict.*, no. 24, 1768.

Damp thickets and marshy ground, Cape Breton Island; apparently not common.

The name *A. paniculatus* Lam., though illegitimate, is here retained as a temporary expedient, following the nomenclature used by Wiegand, pending a more complete investigation of the much involved and uncertain synonymy of the species.

#### V. FOLIACEUS SERIES

Involucres middle-sized to large (5–9 mm. high); middle phyllaries with green tips formed by the expansion of the midveins, outer phyllaries loose, more or less enlarged and foliaceous. Leaves glabrous, sessile, often very slightly clasping at base. Stems glabrous or pubescent in lines.

10. *A. Rolandii*, sp. nov. Species parva maritima littoralis, *A. foliaceo* affinis, sub nomine *A. novi-belgii* confusa: minor, caulis 8–50 cm. altus, internodi superiores 4–16 mm. longi; inflorescentia corymboso-paniculata; involucria 5–8 mm. alta, phyllariis exterioribus plus minusve foliaceis, longioribusque interioribus; ligulae 8–13 mm. longae, disci 8–12 mm. lati, pappus plus minusve tinctus. TYPE: Roadsides, Troy, Inverness Co., Nova Scotia, *A. R. Prince and C. E. Atwood 1456*, Sept. 26, 1928 (in *Herb. Univ. of Wisconsin*).

Perennial from extensively creeping and freely branching rootstocks, forming loose mats. Stems glabrous or pubescent in lines above, more or less striate or sulcate, varying in color from stramineous or light green through speckled to solid red-brown or red-purple. Branching normally above the middle, the inflorescence broad and more or less flat-topped. Leaves glabrous except for the scabrous margins, elliptic-lanceolate to linear-lanceolate, entire or sharply and shallowly serrate, dark green above, paler and prominently reticulate-veined beneath, 1-ribbed, often with

sterile axillary shoots. Branches and peduncles with scattered leafy bracts of uneven size, the upper much reduced. Involucres broadly turbinate or hemispherical, the outer phyllaries from slightly shorter to longer than the inner, loose or occasionally almost squarrose, acute, more or less foliaceous. Pappus gray or dingy yellow to light brown or rust-color.

Very common on sandy or gravelly beaches and in wet places along the coast, throughout Nova Scotia, including Sable Island. Found also along the coasts of Quebec, New Brunswick, and Prince Edward Island.

True *Aster novi-belgii* L., based on "*Aster novae belgiae latifolius, umbellatus, floribus dilute violaceis*" of Hermann's *Hortus Lugduno-Batavus*, and typified by plate 69 in that work (cf. Gray, 1882), is a much stouter plant than *A. Rolandii*, with the long internodes and tall stems of *A. foliaceus*, but the inflorescence racemose-paniculate, and the branches and peduncles with numerous rather uniform leafy bracts. The inflorescence is usually very large, often embracing more than half the plant. Judging from the rather scanty herbarium material seen, it ranges from Massachusetts to Pennsylvania and Virginia, probably in several varieties differing in leaf proportions, leaf texture, nature of the phyllaries and bracts of the peduncles (prevailingly strongly squarrose), and size of involucres. Some of the varieties recognized by Asa Gray (1884) were based on European garden plants of questionable identity, and perhaps should not be retained for the wild forms of North America. The application of all the names is in need of revision.

11. *A. FOLIACEUS* Lindl. *A. junceus* and *A. longifolius* of authors, in large part, especially as to plants of Nova Scotia.

Swamps and marshes, both along the coast and in the interior, common throughout the province.

Variable in leaf-proportions, number of heads, compactness of inflorescence, leafiness of phyllaries, and time of flowering. In some Quebec specimens the outer phyllaries are extremely large and leafy, suggesting the western *A. Cusickii*; these perhaps should receive recognition as a separate variety. Certain others with broad-based and more or less clasping leaves may represent hybrids with *A. puniceus*, and some with very narrow leaves suggest hybridization with *A. junciformis* Rydb., a species now known to extend eastward to Quebec (Anticosti) and New Brunswick. The whole group of *Aster foliaceus* is a complex one, whose

proper revision for eastern North America would entail a study of the numerous and difficult western forms of the species and its relatives. No attempt is made here to do more than assign the Nova Scotia plants to the proper species, without concern for varieties which it may be desirable to recognize at some later time.

As indicated in a previous paper (1941), *Aster junceus* Ait. was based on a mixture, and the name has been applied to a mixture containing one element which was not among those known to Aiton. No more satisfactory solution has resulted from the present study, and the name is therefore dropped altogether. *Aster longifolius* Lam. may be the same as *A. foliaceus* Lindl. Several specimens so named by Gray, after seeing the type, are *A. foliaceus*, but one is *A. paniculatus*. The description is insufficient for satisfactory identification. In view of the ever present possibility of hybridization, especially common in this group, it does not seem desirable to displace the well established *A. foliaceus* Lindl., a name fortunately based on wild plants collected in America.

#### VI. PUNICEUS SERIES

Involucres large (6–12 mm. high); middle phyllaries with green tips formed by the expansion of the midveins, outer phyllaries enlarged and foliaceous. Leaves scabrous, sessile and auriculate-clasping. Stems hispid-pubescent over the surface.

12. *A. PUNICEUS* L. Swamps and wet open places; common throughout the province.

Some of the named varieties are probably to be referred to hybrids with *A. foliaceus* or other species, others are hardly more than forms of the species itself. For the present, no attempt is made to dispose of them individually.

#### VII. NOVAE-ANGLIAE SERIES

Involucres large (7–12 mm. high), glandular; rays very numerous. Leaves auriculate-clasping, rather short and crowded. Stems hispid-pubescent.

13. *A. NOVAE-ANGLIAE* L. Vicinity of Annapolis, Annapolis Co., and Woodburn, Pictou Co.; probably an escape from cultivation.

#### VIII. NEMORALIS SERIES

Involucres rather large (6.3–9.0 mm.); midveins of the phyllaries not expanded upward. Rays long and conspicuous.

14. *A. NEMORALIS* Ait. Bogs and marshes, very common throughout the province.

× *A. BLAKEI* (Porter) House, N. Y. State Museum Bull. 219-220: 241, 1919. *A. nemoralis* var. *Blakei* Porter, Bull. Torr. Bot. Club 21: 311, July 20, 1894. *A. nemoralis* var. *major* Peck, N. Y. State Mus. Ann. Rept. 47 (1893): 155, 1894; not *Aster major* (Hook.) Porter (as *majus*), Mem. Torr. Bot. Club 5: 325, 1894. (*A. acuminatus* × *A. nemoralis*.)

Borders of woods and thickets, in damp or rather dry ground; rather common in the southern and eastern parts of the province.

In Nova Scotia, *Aster Blakei* is most common in sections where one supposed parent, *A. acuminatus*, is rare or unknown. This does not necessarily rule out the possibility of hybridization in the past as an explanation for the origin of *A. Blakei*, but does indicate the desirability of further investigation. It is unusually common and uniform for a hybrid *Aster*, but the parents belong to a group separate from the common eastern *Asters*, and it is to be expected that hybrids between them might behave differently from those of the true *Asters*. In view of the intermediate characters of *A. Blakei*, both morphological and ecological, House's conclusion that it is a hybrid seems entirely reasonable. In general appearance it resembles *A. nemoralis* more than *A. acuminatus*, but as shown in the key, it is about as close to one as to the other in the two most useful diagnostic characters.

15. *A. ACUMINATUS* Michx. Deciduous woodlands and thickets, preferring drier soils; common in the northwestern part of the province, very uncommon elsewhere.

#### X. UMBELLATUS SERIES

Involucres small (3.0-4.6 mm. high); midveins of the phyllaries not expanded upward. Inflorescence flat-topped.

16. *A. UMBELLATUS* Mill. Swamps, damp thickets, and marshy ground; common throughout the province.

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## A NEW SPECIES OF *HAPLOPAPPUS* FROM SOUTHWESTERN TEXAS

U. T. WATERFALL

LAST August the author made a collecting trip<sup>1</sup> through that interesting desert and desert-transition area, the Transpecos Region of Southwestern Texas. At the first station, selected a few miles northeast of Carlsbad because the vegetation was rapidly changing from the familiar plains type to the very different Transpecosian flora, an odd-looking Composite was noticed, but collected only in unicate. It was not taken again until ten days later near Van Horn in Culberson County, Texas. Upon later examination it proved to be a species of *Haplopappus* which did not fit available descriptions. Its stiffly erect habit, numerous small leaves, very leafy branches terminated by single heads, and rays turning reddish upon drying tend to set it apart from the known species of that genus. In examining Hall's monograph<sup>2</sup> it became evident that it belongs in the *H. phyllocephalus* complex.

Dr. Johnston, who determined or verified duplicates of this collection, in kindly checking *Haplopappi* in the Gray Herbarium found another sheet of this species. It is Dr. Havard's number 88 taken at "Guadalupe Mts., W. Texas". Dr. Johnston writes, "Gray was troubled in identifying it (a good specimen) and finally wrote on the sheet, 'Hybrid of *A. rubiginosus* and *Aster gymnocephalus*'." I believe, however, that it is a distinct

<sup>1</sup> Funds to defray the expenses of this investigation were furnished by the Carnegie Institution through the kind offices of Dr. Forrest Shreve of the division of Desert Investigations of the Carnegie Institution. Tucson, Arizona.

<sup>2</sup> Hall, H. M., *The Genus Haplopappus. A Phylogenetic Study in the Compositae*. Carnegie Inst. of Washington, Pub. 398. 1928.

species, and am naming it in honor of its first collector, Dr. Havard.

**HAPLOPAPPUS Havardii**, sp. nov. *Planta erecta rigida foliosa glandulosa, annua vel biennis. H. annuo* affinis, a quo differt glandulis confertioribus, foliis numerosis minoribus obtusis breviter dentatis, capitulis minoribus ramulos conspicue foliosos terminantibus.<sup>1</sup>

Plant 2 to 4 dm. high, stiffly erect, annual or biennial from a short taproot. Stem solitary, branched above, pubescent with capitate glands. Leaves numerous, oblanceolate to oblong, principal cauline leaves oblanceolate to spatulate, 2 to 3.5 cm. long and 2 to 4 mm. wide, reduced upward toward the heads. All the leaves rather regularly but not deeply toothed, the rameal leaves with narrow salient teeth, the principal cauline leaves with more broadly triangular ones, most of the teeth not bristle-tipped, although the larger ones may have a few teeth with a short mucro; leaves capitate-glandular on both sides and on the margins. Heads about 1 cm. long, turbinate, solitary on the ends of leafy branches, subtended by one or two entire much-reduced leaves. Phyllaries linear, glandular, stiff, having a middle strip of green expanding toward the tip, or the longer inner ones having the strip of green only on the upper half. Ray-florets 8 to 10 mm. long and about 1 mm. wide in the expanded upper part, pistillate, but non-fertile, yellow, some of them turning reddish on drying. Disc-corollas 5 to 6 mm. long, yellow. The narrowly triangular, acute, pubescent stylar appendages from  $\frac{2}{3}$  the length of the stigmatic lines to almost equalling them; style-branches below the sweeping-hairs somewhat granular-glanduliferous, especially on the backs. Achenes about 2.5 mm. long, spindle-shaped, quadrangular at the top, sericeous-pubescent, obscurely nerved: pappus minutely barbelate. Receptacle alveolate, the alveolae scaly around the margins.

The three known collections of this species came from east of the Guadalupe Mountains in New Mexico, from the "Guadalupe Mts., west Texas", and from south of these mountains in southern Culberson County. The first is the author's number 3707 collected in sand on rolling plains in a *Mimosa-Gutierrezia* assn. along the Quahada Ridge, 12 miles northwest of Carlsbad, Eddy County, New Mexico; unicate in the Gray Herbarium with a fragment in the author's private herbarium. The second is Dr. Havard's number 88. The third is the author's number 4153 taken in rocky, white (perhaps gypseous) soil in an association

<sup>1</sup> For aid in preparing the Latin diagnosis I am indebted to Dr. I. M. Johnston.

of *Larrea*, *Flourensia*, and *Gutierrezia*, 9 miles east of Van Horn, Culberson County, Texas. This number (my 4153) in the Gray Herbarium is selected as the TYPE. Isotypes are in the herbaria of the Desert Laboratory of the Carnegie Institution, the Missouri Botanical Garden, the New York Botanical Garden, and in the author's private herbarium. Not all the isotypes have well developed lateral branches.

OKLAHOMA CITY, OKLAHOMA.

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MINOR TRANSFERS AND FORMS IN *CIRSIUM*.—In studying *Cirsium* the following transfers have been found necessary:

*CIRSIUM HORRIDULUM* Michx., forma **Elliotii** (Torr. & Gray), stat. nov. Var. *Elliotii* Torr. & Gray, Fl. N. Am. ii. 460 (1843). *Cnicus horridulus* Ell. Sk. ii. 272 (1822), not *Cirsium horridulum* Michx. (1803).

*Cirsium horridulum*, described by Michaux from "pascuis ruderatisque Carolinae", is assumed to be the wide-ranging plant, from Texas to Florida, northward to southern Maine, with the large foliaceous bracts equaling or overtopping the true involucre, the phyllaries eciliate, the corollas creamy to yellowish, the principal cauline leaves with broad and more or less quadrate lobes. This has always been taken as *C. horridulum* but earlier authors, Torrey & Gray and others, did not recognize the recently described southern plants, *C. Smallii* Britton, based on *Carduus pinetorum* Small (1913), not *Cirsium pinetorum* Greenm. (1905), and *C. vittatum* (Small) Small (1913), which started as *Carduus vittatus* Small (1905). *C. Smallii* has smaller heads than *C. horridulum*, with the foliaceous bracts relatively short, the phyllaries erose-ciliate and the deeply pinnatifid leaves with more lance-attenuate lobes. *C. vittatum* is similar to it but with merely undulate-toothed leaves and the phyllaries less definitely ciliate. Whether the latter is a distinct species or an intermediate between *C. horridulum* and *C. Smallii* is yet to be determined. All three occur in the Carolinas, as does the purple-flowered plant described by Elliott. Until Michaux's type of *C. horridulum* can be restudied I am holding it in the sense defined by Small.

*C. MUTICUM* Michx., forma **subpinnatifidum** (Britton), stat. nov. *Carduus muticus*, var. *subpinnatifidus* Britton in Britton & Brown, Ill. Fl. iii. 489 (1898). *Cirsium muticum*, var. *subpin-*

*natifidum* (Britton) Fernald in RHODORA, x. 95 (1908).—Merely a leaf-form.

C. PUMILUM (Nutt.) Spreng., forma **fultius**, f. nov., capitulis valde bracteatis, bracteis foliaceis numerosissimis (25–40) confertis involuero superantibus.—CONNECTICUT: Wethersfield, 1878, Chas. Wright in Herb. Gray.

A most extraordinary form, the 25–40 crowded leafy bracts much longer than the involucre and forming a dense rosette at its base.

C. PUMILUM, forma **candidum**, f. nov., floribus albidis.—MASSACHUSETTS: Ashby, July 12, 1889, W. H. Manning (TYPE in Herb. New England Bot. Cl.).

A word should be said regarding the name *Cirsium pumilum* (Nutt.) Spreng. It started with Nuttall, Genera, ii. 130 (1818), but many recent authors, Porter, Petrak, Britton and Small, have started the binomial with *Cnicus odoratus* Muhl. Cat. 70 (1813) getting, under *Cirsium*, the resultant combination *Cirsium odoratum* (Muhl.) Petrak in Bot. Tidsskr. xxxi. 68 (1911). Had Petrak looked up *Cnicus odoratus* in Muhl. Cat. l. c. he would have found merely the translation (as usual there) of the name and the locality and date:

purp. 7.odoratus 24 sweet-scented Pens. fl. Jul.

That, like so many of the names in Muhlenberg's *Catalogus* is a *nomen nudum*. No species was described. Barton, Compend. Fl. Phil. ii. 95 (1818), was the first to associate Muhlenberg's *Cnicus odoratus* with a description. He there copied the essential points of Nuttall's description of *Cnicus pumilus*, cited Nuttall as his source and also cited *C. pumilus* Nutt. as a synonym. The record of copyright of Nuttall's second volume in the District of Pennsylvania states that Nuttall registered the volume "on the third day of April", 1818, the affidavit signed by D. Caldwell. Mr. Caldwell's affidavit states that Barton's 2nd volume was entered for copyright "on the ninth day of July", 1818. *Cirsium pumilum* seems to have right of way.—M. L. FERNALD.

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A NEW FORM OF PRUNUS VIRGINIANA FROM INDIANA AND ILLINOIS.—As it occurs throughout its range from Newfoundland to eastern South Dakota, and southward to Kansas and Florida, the common eastern American chokecherry, *Prunus virginiana* L., is a shrub or small tree with leaves, young twigs, pedicels, and

rachises nearly or quite glabrous. However, occasional specimens from Indiana and Illinois, and perhaps elsewhere, have the lower surface of the leaf-blades, the petioles, young twigs, and the rachis and pedicels of the racemes more or less pubescent. There appears to be no other morphological character, or ecological or geographical difference to separate these two forms. In 1920 C. S. Sargent supposed this pubescent form of *P. virginiana* to be the same as *P. demissa* (Nutt.) Dietr. of the Pacific Coast, and he was followed in this conclusion by C. C. Deam in 1924, and again in 1940. A more plausible interpretation, and one that harmonizes satisfactorily with the known principles of the phytogeography of the Central States, is that the leaves and inflorescences of *P. virginiana*, like those of the western *P. melanocarpa* (A. Nels.) Rydb., although usually glabrous or glabrate, show occasional variation toward the pubescent condition. Even as the pubescent form of *P. melanocarpa* has been named f. *Rydbergii* Koehne, after the late Dr. P. A. Rydberg, we now name the parallel variation of *P. virginiana* in honor of the outstanding veteran botanist of Indiana, Dr. Charles C. Deam. It may be designated:

*PRUNUS VIRGINIANA* L. f. **Deamii**, forma nov. *Prunus virginiana* var. *demissa* Sargent in Journ. Arnold Arb. 2: 115. 1920; Deam, Shrubs of Indiana 155, 1924, Fl. Indiana 581. 1940. Non *Cerasus demissa* Nuttall ex Torrey & Gray 1840.—Formae typicae statura habitu etc. similis; foliis rachibusque pubescentibus. Lower surface of leaves conspicuously pubescent; young twigs and rachis of inflorescence tomentulose; racemes shorter and more compact; leaf-blades somewhat thicker.—INDIANA: Millers, Lake Co., August 14, 1911, C. C. Deam 9572 (TYPE, NY); Michigan City, La Porte Co., Deam 6443, 7088 (NY); Graveyard Lake, Steuben Co., Deam 8860 (NY). ILLINOIS: along Rock Creek near Rockville, Kankakee Co., May 10, 1941, G. Neville Jones 13518 (UI); five miles northwest of Bonfield, Kankakee Co., May 10, 1941, G. Neville Jones 13563 (UI); Starved Rock, La Salle Co., Greenman, Lansing, & Dixon 130 (NY); Wady Petra, Stark Co., Virginus H. Chase 437 (NY, UI).

This form of *Prunus virginiana* L. is quite distinct from the western American *P. demissa* (Nutt.) Dietr. That species, which ranges from British Columbia to California, differs from *P. virginiana* and its f. *Deamii* in its larger petals, longer anthers and style, dark purple fruits, and different habit of growth.—GEORGE NEVILLE JONES, University of Illinois.

OUR ALBINO LUPINE.—*Lupinus perennis* L. commonly has the petals blue-purple, more rarely pink (forma *roseus* Britton) and occasionally white. The white-flowered forma *albiracemus* A. H. Moore in RHODORA, xvi. 129 (1914) and the Michigan forma *bicolor* Farwell in Am. Midl. Nat. xii. 123 (1930), with two contrasting madder tones in the flower, both belong to the inland var. *occidentalis* S. Watson. In order that our white-flowered form of typical *L. perennis* of the Atlantic slope may have a convenient designation I am calling it

LUPINUS PERENNIS L., forma **leucanthus**, f. nov., petalis albidis. TYPE: dry gravelly, open hill, New Milford, Connecticut, June 9, 1932, *E. H. Eames*, no. 11,401 (in Herb. Gray.).

—M. L. FERNALD.

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EASTERN EXTENSION OF *CIRSIIUM FLODMANI*.—The species of prairie and plain, *Cirsium Flodmani* (Rydb.) Arthur, is generally supposed to extend eastward into Manitoba, Minnesota and Iowa. I find in the Gray Herbarium, however, two sheets of specimens from farther east: one from dry clearing, Temagami Forest Reserve, Ontario, July, 1922, *W. R. Watson*, no. 5963 (originally identified by me as *C. undulatum*); the other from a sandy field east of Minerva, Essex County, New York, August, 1927, *House*, no. 15,166 (distributed as *C. altissimum*). It will be interesting to know whether these are native stations or whether the plant is migrating eastward.—M. L. FERNALD.

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